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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,198	03/18/2004	Olivier M. Parriaux	ICB0166	4841
24203	7590	02/02/2007	EXAMINER	
GRIFFIN & SZIPL, PC SUITE PH-1 2300 NINTH STREET, SOUTH ARLINGTON, VA 22204			TURNER, SAMUEL A	
			ART UNIT	PAPER NUMBER
			2877	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/02/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/803,198

Applicant(s)

PARRIAUX, OLIVIER M.

Examiner

Samuel A. Turner

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9, 12-17, 19-34, 37, 38, and 40-43 is/are allowed.
- 6) ☒ Claim(s) 18,35,36 and 39 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Oath/Declaration*

The supplemental declaration filed 20 December 2006, addressing new claims 35-43 has been received.

### *Claim Objections*

Claim 11 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 11 is identical to the subject matter added to claim 1.

In claim 28  $\Lambda$  is undefined.

### *Claim Rejections - 35 USC § 112, second paragraph*

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18 and 39 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 18 and 39 are indefinite because the location of the "at least one diffraction grating" with respect to the optical system claimed is not defined.

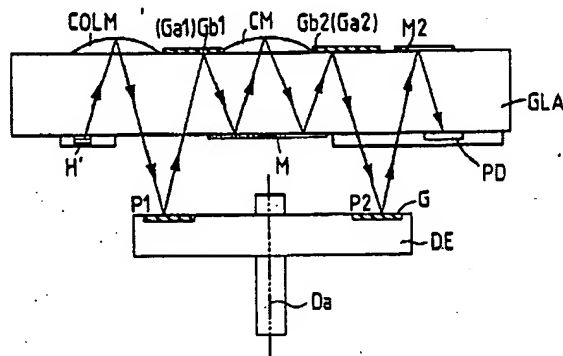
*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 35 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishizuka(5,498,870) in view of Regener(5,194,917).

FIG. 5A



With regard to claim 35 and 36, Ishizuka teaches a device utilizing light diffraction for measuring translation, rotation or velocity(Fig. 5A), the device comprising:

a light source emitting an incident light beam(Fig. 5A, H');

at least one light detector for detecting a resultant interference beam(Fig. 5A, PD);

a diffraction grating assembly located on a light path of the incident light beam between the light source and the at least one light detector(Fig. 5A; G, GLA),

the diffraction grating assembly comprising a first reflective grating assembly(Fig. 5A, G) and a second reflective grating assembly(Fig. 5A, GLA);

wherein the first grating assembly is mobile along a given displacement relative to the second grating assembly(Fig. 5A, G);

wherein the first and second grating assemblies are arranged to diffract at least a portion of the incident light beam(Fig. 5A);

the incident light beam reaching the first grating assembly where the incident light beam is partially diffracted along two different directions thereby forming two partial light beams(Fig. 5A, P1) which reach the second grating assembly(Fig. 5A, GLA), and, thereafter, the first grating assembly(Fig. 5A, P2),

thereby forming, after diffraction by the first grating assembly, the resultant interference beam resulting from interference of the two partial light beams along an output direction(Fig. 5A, P2; the combined beam incident on PD);

wherein the second grating assembly, the source, and the at least one detector form an integrated measuring head(Fig. 5A, GLA) and

the first grating assembly further comprises a first reflective grating that defines a scale for the device(Fig. 5A, G) and

wherein the light source and detector are integrated on a semiconductor substrate bearing the second grating assembly(Fig. 5A; H',PD).

Ishizuka fails to teach wherein the light source and detector are integrated in a semiconductor substrate bearing the second grating assembly.

Regener teaches that a detector can be doped into an interferometer substrate(column 2, lines 59-61), while the light source can be grown on the substrate(column 3, lines 3-5) or integrated into the substrate using a mounting pit(column 3, lines 1-3).

With regard to claims 35 and 36, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishizuka by either by integrating on or integrating into the substrate the light source and detector.

The motivation for this modification is found in Regener which teaches that the light source and detector are integrated into the substrate so that no alignment adjustment is needed(column 3, lines 1-3).

*Allowable Subject Matter*

Claims 1-9, 12-17, 19-27, 29-34, 37, 38, and 40-43 are allowed in view of the prior art of record.

Claims 18 and 39 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. § 112, second paragraph, set forth in this Office action.

Claim 11 would be allowable if rewritten or amended to overcome the objection(s) to minor informalities, set forth in this Office action.

With regard to claim 1, the prior art of record fails to teach the limitations of “a first reflective grating assembly and a second reflective grating assembly” and “wherein the resultant interference beam is directed at a resultant angle in a plane perpendicular to lines along which the first grating assembly and the second grating assembly are formed” in combination with the remaining limitations of claim 1. Claims 2-27, 31, 32, and 34 are dependent from claim 1 and therefor also include the allowed subject matter.

With regard to claim 37, the prior art of record fails to teach the limitation of “the diffraction grating assembly comprising a first reflective grating assembly having a first reflective grating and a second reflective grating assembly having a second reflective grating” and “wherein the first grating and the second grating are formed of several longitudinal secondary, gratings of close but different frequencies” in combination with the remaining limitations of claim 37.

With regard to claim 38, the prior art of record fails to teach the limitation of “the diffraction grating assembly comprising a first reflective grating assembly and a second reflective grating assembly” and “at least one diffraction grating arranged beside at least one of the first grating assembly and the second grating assembly so as to define at least one reference position for the at least one detector” in combination with the remaining limitations of claim 38.

With regard to claim 39, the prior art of record fails to teach the limitation of “the diffraction grating assembly comprising a first reflective grating assembly and a second reflective grating assembly” and “at least one diffraction grating having at least one offset or phase jump incorporated with the lines of the at least one diffraction grating so as to define at least one reference position for the at least one detector” in combination with the remaining limitations of claim 39.

With regard to claim 40, the prior art of record fails to teach the limitation of “the diffraction grating assembly comprising a first reflective grating assembly having a first reflective grating and a second reflective grating assembly having a second reflective grating” and “the light source emits the incident light beam so the incident light beam comprises a first partial beam incident upon the first grating assembly at a positive angle of incidence and a second partial beam incident upon the fixed grating assembly at a negative angle of incidence” in combination with the remaining limitations of claim 40. Claims 28-30, and 41 are dependent from claim 40 and therefor also include the allowed subject matter.

With regard to claim 42, the prior art of record fails to teach the limitation of “the diffraction grating assembly comprising a first reflective grating assembly having a first reflective grating and a second reflective grating assembly having a second reflective grating” and “at least one of the first grating or the second grating defines a bi-directional diffraction grating having a same spatial period along two orthogonal axes” in combination with the remaining limitations of claim 42.

With regard to claim 43, the prior art of record fails to teach the beam paths defined by the two reflective surfaces in combination with the remaining limitations of claim 43.

#### *Response to Arguments*

Applicant's arguments with respect to claims 35 and 36 have been considered but are moot in view of the new ground(s) of rejection. While the detector and light source are on the substrate, it is well known to integrate sources and detectors into a substrate by doping or a mounting pit.

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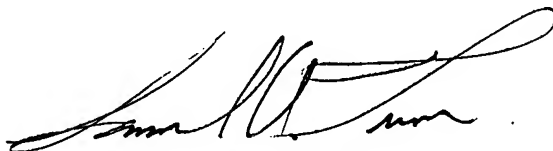
*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is 571-272-2432.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached on 571-272-2800 ext. 77.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Samuel A. Turner', with a stylized flourish at the end.

Samuel A. Turner  
Primary Examiner  
Art Unit 2877